

**AN ALL-HAZARDS TRAINING CENTER
FOR A CATASTROPHIC EMERGENCY**

**Colonel Xavier Stewart
Pennsylvania Army National Guard**

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PREFACE

The U.S. Army War College provides an excellent environment for selected military officers and government civilians to reflect on and use their career experience to explore a wide range of strategic issues. To assure that the research conducted by Army War College students is available to Army and Department of Defense leaders, the Strategic Studies Institute publishes selected papers in its "Carlisle Papers" Series.

A handwritten signature in black ink, appearing to read "Antulio J. Ecchevarria II".

ANTULIO J. ECHEVARRIA II
Director of Research
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ABOUT THE AUTHOR

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ABSTRACT

Since assuming command in 1998 of the first Civil Support Team (CST) Weapons of Mass Destruction (WMD), Colonel Stewart witnessed and experienced dramatic changes in homeland security theory, policy, and practice. Understandably, the most significant changes have occurred since the horrific attacks on September 11, 2001, which violently demonstrated how turbulent today's world strategic environment is. Widely available chemical, biological, radiological, nuclear, high yield explosive, and cyberspace security (CBRNE-C) materials, technologies, and equipment often have dual uses. Preventing rogue states and terrorist organizations from acquiring these materials is a necessary but formidable challenge. Additionally, the cyber domain has grown tremendously and may be used to target key infrastructure and resources. In addition to these threats, dramatic weather changes have caused unusual and devastating shifts in weather patterns, which in turn have triggered catastrophic events.

This paper proposes establishment of All-Hazard Training Centers (AHTC) in the 10 Federal Emergency Management Agency (FEMA) regions to train CST WMD and emergency responders for CBRNE-C events or natural catastrophes.

AN ALL-HAZARDS TRAINING CENTER FOR A CATASTROPHIC EMERGENCY

The Role of Civil Support Teams (Weapons of Mass Destruction).

Prior to September 11, 2001 (9/11), international terrorism targeting the U.S. homeland, and Weapons of Mass Destruction (WMD) were mostly topics for casual discussion and intellectual debate. At the forefront of emergency planning were responses to natural disasters. Civil defense was thought to be irrelevant. However, in 1998, Richard Preston's *The Cobra Event* convinced the Clinton administration to place greater emphasis on WMD, specifically on biological warfare. President Clinton directed the establishment of National Guard Weapons of Mass Destruction Civil Support Teams (formerly Rapid Assessment Initial Detection Teams) and increased spending on domestic preparedness. He issued Presidential Decision Directives 62 and 63 to combat the growing threat of terrorism, and to implement measures to identify and protect the nation's critical infrastructure, respectively.

In 1998, Colonel Stewart assumed command of the first Rapid Assessment Initial Detection (RAID) Team. His team was comprised of 22 full-time Title 32 Army and Air National Guard personnel who were highly trained in their respective Military Occupational Specialties/ Air Force Specialty Code (MOS/ AFSC) but lacked the technical didactic background and hands-on experience to respond to a WMD incident.

There was no training curriculum for the original 10 Civil Support Teams (CSTs). The Pentagon rushed to select schools that provided chemical, biological, radiological, nuclear, and high-yield explosive (CBRNE) training. These schools were located throughout the country in a variety of Department of Defense (DoD), federal, state, and civilian programs. There was no standardized curriculum—courses were constantly added and others deleted. Through a haphazard educational process, Colonel Stewart's team received over 2,000 hours of training in CBRNE, incident command, hazardous material (HAZMAT), occupational safety, domestic preparedness, and military support to civil authority topics. His team spent over 22 months in 12 different states, using 240 days of temporary duty (TDY) during the first year of training, and 221 days of TDY for the second year of training.

Throughout this training experience, Colonel Stewart observed that there was no methodology to validate both the didactic and hands-on training for new personnel. Furthermore, this arbitrary training program was time consuming and expensive. There were no tools to measure the effectiveness and quality of the training provided to the CSTs. The curriculum was not standardized, therefore, as new RAID teams were established in the 10 Federal Emergency Management Agency (FEMA) regions, the degree of expertise and reliability exhibited by these teams varied by region. Through 1999 and 2000, RAID Teams designation changed to Military Support Detachment (MSD) then to Weapons of Mass Destruction Civil Support Team (WMD CST) and to the current designation as Civil Support Team (WMD). However, the variability of training and standardization did not change. Today there are 55 teams (53 states and territories, the District of Columbia, and two teams for California), with another two teams being established, one for New York City and one for Florida.

As the teams were being formed, some unit commanders opted for local training, and others sought training from myriad CBRNE/WMD schools and programs. Colonel Stewart established a core curriculum and mandatory training programs for his team by using a mobile training team (MTT) process from established and accredited schools. Eventually the National Guard Bureau (NGB) became the lead agency for the CSTs.

In 1999, a standardized training program was established at Fort Leonard Wood, Missouri. A core curriculum providing the minimum competency was developed for all teams. Individuals are currently required to complete a 7-week core curriculum with both didactic and hands-on training. Upon completion of this training, the "R1" Additional Skill Identifier (ASI) is awarded to the Soldier or Airman.

Although NGB-directed training has improved the capability of the CST (WMD) teams to respond to CBRNE/WMD/HAZMAT incidents, the CST (WMD) performance varies widely. A regional training program with a standardized core curriculum and centers to evaluate the CST (WMD) teams in a simulated CBRNE/WMD/HAZMAT environment would significantly improve the capability of these teams to support civil authorities. Colonel Stewart's 6 1/2 years experience with more than 45 real-world mission deployments, 125-plus training events as a CST (WMD) commander, and 3 years experience as the Joint Director of Military Support of Civil Authorities leads him to conclude that CST (WMD) teams and emergency responders need the equivalent of what is afforded to operational military brigade-sized units – a combat training center (CTC).

It is proposed that these CST (WMD) and emergency responder training centers be designated as an All-Hazards Training Center (AHTC). This type of center is necessary for the following reasons. Today's global strategic environment remains turbulent. Since the 9/11 attacks on the U.S. homeland, Americans have become increasingly more vigilant to the ongoing threat of terrorism. Widely available chemical, biological, radiological, nuclear, and high yield explosive, and cyberspace security (CBRNE-C) materials, technologies, and equipment often have dual uses. Preventing rogue states and terrorist organizations (state or non-state supported) from acquiring these materials is a formidable but necessary task. CBRNE-C and the threat from cyber attacks are also of significant concern.

Concurrently, the world is experiencing dramatic weather changes. Global climate change has caused unusual shifts in weather patterns, which in turn have triggered catastrophic events. U.S. emergency relief teams are challenged to respond to these national events in a timely manner in order to save lives and property.

The events of 9/11 reverberated throughout the nation and the world. No longer was terrorism against the homeland just a theoretical issue. America found itself embroiled in a war unlike any it had ever experienced. The enemy was among us, virtually undetectable. He wore no uniform; there were no front lines to delineate friend from foe. It was obvious that this enemy had the advantage of years of planning, abundant resources, and the ability to strike at the time, place, and manner of his choosing. To further complicate security issues, hurricanes Katrina and Rita exposed weaknesses in emergency response planning and coordination for natural disasters at local, state, and national levels.

The U.S. war on terrorism has become decidedly more complex as rogue states and terrorist organizations (state or non-state supported) seek to acquire WMD materials. Terrorist groups may be in possession of nuclear weapons obtained either from one of the former members of the Soviet Union or from one of the other emerging nuclear

powers. Our porous borders do not hinder our adversaries' capability to smuggle such a weapon into this country undetected. Iran and North Korea are aggressively pursuing nuclear weapons and delivery capabilities. Public confidence in the Emergency Response Communities' (ERC) ability to respond to natural or man-made disasters has also been shaken. Recent changes in the Department of Homeland Security's (DHS) structure and budget allocations reflect not only the public's concern, but also the realization by government officials that past practices and priorities needed to be revised.

There are currently over eight million first responders within the continental United States. In addition, there are over one million federal and state employees with emergency management responsibilities. In spite of the government's best efforts, only a relatively small number of these emergency responders and managers are adequately trained to deal with natural or man-made disasters. Training programs vary from state to state and community to community. Some state training efforts are as rudimentary as practicing academic *thought* drills while other states conduct training as complex as full scale exercises involving local, state, and federal agencies. Colonel Stewart has experienced the full range of this training inconsistency.

Inadequate responses to catastrophic events could disrupt governmental operations and threaten continuity of operations and continuity of government (COOP/COG) during national emergencies. Development of AHTC is imperative to ensure provision of COOP/COG and to prepare the United States for imminent CBRNE-C incidents in the 21st century.

The establishment of a network of AHTCs in the 10 FEMA regions (where the original 10 CSTs were developed) will provide the federal government with highly trained emergency responders. A standardized quality control program will support response to CBRNE-C events in a timely and effective manner. These regional training centers would serve CST (WMD) and emergency responders by minimizing their training travel time and expenses. A strategic methodology and standardized template for AHTC training will provide hands-on training and education to enable the United States to be better prepared to maintain COOP/COG. This methodology and template should be incorporated into a future Presidential Policy Directive (PPD) by the Obama administration.

Clinton's Presidential Decision Directive (PDD) 67 required planning to ensure the continuity of essential government services during emergency situations. It designated FEMA as executive agent for executive branch COOP planning. In response, in July 1999, FEMA issued guidance with Federal Preparedness Circular (FPC) 65 which addressed COOP capability and planning for federal agencies.¹ In 1999, the Director of the Office of Management and Budget (OMB) identified 42 programs with a high impact on the public, 38 of which were the responsibility of 23 major departments and agencies. Although PDD 67 is a Top Secret document of the National Security Council (NSC), FPC 65 and other unclassified documents have identified government-wide deficiencies, including potential disruptions of governmental services that could impair appropriate emergency responses.²

Indeed, an inadequate response to a catastrophic emergency could disastrously disrupt federal government operations. Consequently, throughout this section and based on his vast experience, the author has identified several special considerations in today's global environment that pertain to CBRNE-C and catastrophic events. These special

considerations warrant the establishment of a strategic methodology and a standardized template for utilizing an AHTC as a force multiplier in support of federal, state, and local governments. The proposed AHTCs will provide first-rate professional and standardized training and education programs that will significantly enhance the effectiveness of a national response to any type of emergency. This recommended solution supports the various homeland security goals and objectives outlined in the following national strategies: National Strategy for Homeland Security,³ National Strategy for Pandemic Influenza,⁴ National Strategy for Combating Terrorism,⁵ Homeland Security Pandemic Influenza CI/KR,⁶ the National Security Strategy,⁷ National Strategy to Combat Weapons of Mass Destruction,⁸ National Military Strategic Plan on the War on Terrorism,⁹ Homeland Security Presidential Directive-5 (HSPD-5), National Incident Management System (NIMS), the National Response Framework (NRF), and the 15 Emergency Support Functions (ESF's) under the Incident Command System (ICS) plan to ensure COOP/COG.

Biological Threats.

Biological diseases have plagued our planet since the dawn of mankind. These diseases are usually spread by vectors (human or nonhuman). Bacteria, viruses, and toxins are biological agents that have caused large numbers of deaths throughout human history, usually through lack of knowledge of proper sanitation, poor hygiene, or lack of waste treatment facilities.

The weaponization of biological agents is increasing, particularly among underdeveloped nations. Uses of biological weapons and agents historically are well-documented. The Assyrians poisoned enemy wells in the 16th century BC, and the Tartar Army hurled dead plague-infested corpses over city walls.¹⁰ With technological advancements, scientists began to improve biological processes. "Today, scientists can engineer organisms to exhibit specific traits and resistant characteristics."¹¹ The threat from a biological weapon purposely released by a terrorist or accidentally discharged is of concern. In April 1979, over 800 residents died in a local Russian community near the Soviet biological research facility located in Sverdlovsk, Russia, due to an accidental release of an aerosol anthrax spore.¹² This highly lethal anthrax strain was being weaponized through technical engineering. More recently, on January 21, 2009, in the Islamic Maghreb, 40 members of al-Qaeda died in Algeria from the plague. This outbreak may have been the result of experimentation with developing biological weapons.¹³

Biological weapons and agents have the potential bring about widespread global devastation. They are the most difficult of all CBRNE-C events to control, prevent, or respond to. The potential danger that biological agents pose to civilization emphasizes the necessity for the development of an AHTC that will provide CST (WMD) and emergency responders a state-of-the-art training center.

Pandemics and Consequence Management Considerations.

The field of medicine in the U.S. has grown tremendously in recent years. The first public health revolution of the 19th century has given Americans a wide range of benefits: improved diet, safe drinking water, better waste control and treatment, immunizations, pasteurized milk, and better housing. We are now a far healthier nation, better prepared to prevent and respond to a pandemic event or biological terrorist attack.¹⁴ Nevertheless, we must now deal with extensive alterations in disease patterns, especially in those involving the respiratory system.¹⁵ Today, we have a compounded problem with the health of our population. The United States has an older population, many citizens with immune-suppressed or compromised immune systems (i.e., Human Immune Virus and cancer) and special populations such as those in long-term care facilities, prisons, and densely populated cities.

Currently, approximately 36,000 Americans die from the flu each year, and more than 200,000 are hospitalized annually. Influenza costs U.S. taxpayers about \$10 billion annually.¹⁶ Accordingly, former Secretary of Homeland Security Michael Chertoff recently warned, "A severe pandemic influenza presents a tremendous challenge as it may affect the lives of millions of Americans, cause significant numbers of illnesses and fatalities, and substantially disrupt our economic and social stability. There is always a potential for new strains of influenza to develop naturally."¹⁷ For example, the 1918 Spanish Flu influenza pandemic killed approximately 25 percent of the U.S. population and as many as 100 million people worldwide. An estimated 40 and 36 percent, respectively, of U.S. Army Soldiers and U.S. Navy Sailors were stricken with this virulent flu.¹⁸ These uniformed professionals were rendered combat ineffective. Their vulnerability is equally relevant today since uniformed professionals are on the frontline of U.S. national security at home and abroad. With the United States currently engaged in armed conflict in Operations IRAQI FREEDOM and ENDURING FREEDOM as part of the Global War on Terrorism, the challenge to protect the United States during a pandemic will be exacerbated due to a significant reduction in the available manpower and material of the military element of national power.

The mounting risk of a worldwide pandemic event, whether caused naturally or by a biological attack, can pose an overwhelming public health management problem that could weaken our health care delivery system.¹⁹ The devastating consequences of a pandemic event will kill a large number of Americans and dramatically reduce the number of available workers in all sectors of our nation's workforce through 30 to 40 percent absenteeism.²⁰ Government employees will be similarly affected. A weaponized biological attack, such as genetically engineered smallpox, would be exponentially more lethal and virulent. The Severe Acute Respiratory Syndrome (SARS) outbreak of 2003 should serve as a harbinger of the potential impact of a pandemic.

In addition, a worldwide pandemic will degrade our military forces at home and abroad and disrupt the movement of people and essential goods.²¹ These dire consequences will threaten essential services across our nation and disrupt critical infrastructure (CI) and diminish key resources (KR). These consequences will adversely impact COOP and COG.²² To reduce and mitigate the effects of a pandemic we must implement preventive

measures for early detection and increase our capacity to respond to a pandemic event or biological attack.

Pandemics are unpredictable; they are not constrained by international borders. A pandemic event will most likely originate in an underdeveloped, overpopulated, or failing state. It will most likely overwhelm the stricken nation's health care delivery system, thereby triggering a widespread epidemic. This epidemic will spread over a wide geographic area to adjacent and neighboring nations, potentially escalating into a global pandemic.

In 2007, 900 million people traveled the globe and visited remote areas in Africa, Alaska, Australia, and Southeast Asia. Cambodia alone hosted 856,000 tourists in 2007.²³ This Southeast Asian region remains the worst affected by the Avian Influenza virus H5N1 which continues to pose a global threat.²⁴ Cambodia's visitors also pose a potential threat as human vectors may spread the influenza virus or a highly contagious biological disease such as smallpox, thereby foiling preventive measures. In December 2008 and January 2009, three individuals in China died from the H5N1 virus, raising concerns that this deadly disease still threatens the world community.²⁵

Fortunately, the United States has developed a national strategy to respond to pandemic influenza.²⁶ A *Pandemic Influenza Preparedness, Response, and Recovery Guide for Critical Infrastructure and Key Resources*²⁷ was promulgated in 2006, and the U.S. State Department established an *action group* for pandemic events.²⁸ The *action group* coordinated U.S. preparedness and response to the Avian Influenza with the World Health Organization (WHO), the Food and Agriculture Organization (FAO), World Organization for Animal Health, and other international partners.²⁹ In addition, FEMA has provided guidance for COOP during a pandemic influenza outbreak. Likewise, the White House provided a National Security Presidential Directive-51 (NSPD-51) and Homeland Security Presidential Directive-20 (HSPD-20). The implementation of these documents will trigger essential national functions during a catastrophic emergency.³⁰ These documents—along with the directive plans and initiatives cited earlier (HSPD-5, NIMS, and ICS)—provide a good first step toward ensuring that the United States is addressing the threat of a pandemic event.

U.S. readiness for a global pandemic event through cooperation with the WHO and other international organizations will reduce the pandemic's adverse effects on the health and well-being of Americans. Furthermore, it prepares the United States to respond to a potential biological terrorist attack.

The United States has some 250 diplomatic forward-deployed missions in the form of embassies, consulates, and representatives in specialized organizations. It employs a unified military command system to protect U.S. interests in all regions of the world.³¹ By working through the WHO and other international organizations, U.S. agencies can leverage these assets for early identification of biological threats and for a quick, coordinated response to them. Early detection will enable the United States and international partners to mobilize a health care delivery team to prevent or reduce the spread of a disease which could lead to a global pandemic.

In addition, educating and training our international partners will help prevent the quick spread of the disease. Sharing surveillance instrumentation for early detection and quickly distributing medicines to mitigate the disease will likewise reduce the risk of

a global pandemic. The strategic placement of medicines, supplies, and other essential resources in the United States and in nations where we have an established presence will shorten the response time and hasten delivery of essential resources to sites of a potential outbreak. Working with the WHO and other international partners will reduce our costs, both in financial and human resources. Joint training exercises with our CST (WMD) and emergency responders in an international forum would provide invaluable opportunities for preparation, response, mitigation, and recovery operations.

Our world is counterintuitively small, and global economic interdependence makes a future pandemic event difficult to control. Our global economy requires people and material to travel on all modes of transportation. Migratory birds also travel worldwide and may spread disease as a vector. Therefore, a pandemic event may be inevitable.

The United States has sufficient economic capacity, infrastructure, and pharmaceutical, technological, and transportation capability, and other elements of national power—as well as subject-matter experts—to limit the spread of an outbreak. Although the United States has an excellent infrastructure, including its health care and public health delivery systems, a pandemic event will strain these systems. The United States can strategically position stockpiles around its large urban centers, transportation nodes, and CI/KR locations to ensure the timely distribution of essential resources to protect the populace, reduce the spread of the disease, and ensure COOP/COG. An AHTC would provide the requisite expertise on how to be plan for a pandemic event.

Securing our homeland is our primary and vital national interest. Security requires constant vigilance. The United States must be committed to ensure that our critical infrastructure and key resources are secure. It must also ensure that we maintain continuity of essential operations and continuity of government.

The United States has the wherewithal to prepare for a global pandemic or biological attack, in conjunction with the WHO and other international organizations so as to develop a comprehensive internal implementation plan. The United States can work within the international community to quickly detect, respond to, reduce, and mitigate a pandemic event or biological attack. It is strategically positioned to support international partners.³² Furthermore, its infrastructure has the capability to support the U.S. populace in the event of a pandemic.

Nevertheless, we must especially consider the issues of CI, KR, COOP, and COG. The U.S. health care delivery and public health system must have fully developed plans that incorporate all elements of national power in a coordinated response to a pandemic or biological terrorist event. This plan should minimize national economic disruption and security risks; it should also provide for sustaining social stability and essential functions; it should ensure COOP and COG and provide for overseas military assets. It should generally mitigate the event through a deliberate process.³³ A standardized and fully functioning AHTC will prepare CST (WMD) teams and emergency responders to effectively respond to and recover from a devastating pandemic catastrophe.

Chemical Threats.

The threat of terrorists' use of chemical weapons became a key U.S. concern in the 1990s. "In 1994, a Japanese religious cult, Aum Shinrikyo, reportedly released nerve agent

in a residential area of Mat Sumoto, Japan that killed seven and injured 500. A second attack on March 20, 1995, spread sarin through a crowded Tokyo subway. This act of terrorism killed 12 and caused more than 5,500 civilians to seek medical attention.”³⁴

Terrorism may be supported through either clandestine or state-sponsored initiatives with the specific agenda to make or acquire chemical warfare agents for the purpose of targeting a nation. The chemical and pharmaceutical industries have constructed thousands of facilities around the world, and they can provide terrorist groups with access to precursors and chemicals. Preventing rogue states, profit-making criminals, and terrorists from acquiring these materials is a formidable challenge. Compounds such as chlorine, phosgene, and cyanide are readily available. Access to the internet has enabled rogue states and terrorist groups to acquire technical information and the knowhow concerning the composition and construction of chemical weapons, and information on how to acquire the necessary materials. “Theft of such materials has been reported.”³⁵ This is a concern as the proliferation of chemical materials and technology is increasing.

A terrorist attack in the United States with a chemical agent would have limited impact and would most likely be classified as a localized incident. This type of attack would not degrade the U.S. Government’s ability to maintain COOP and COG. The intentional release of chemical agents into the environment targeting U.S. citizens is highly weather-dependent and requires a fairly sophisticated and effective delivery system. In addition, chemical agents dissipate over time and are usually not persistent unless a large concentrated amount of agent is released in one specific area.³⁶

Although the release of a chemical agent would cause some deaths and injuries, depending on the type of agent released, these deaths and injuries would be primarily localized in the targeted area. Medical management of casualties would pose a challenge for first responders and health care providers. There will be surge demands for triage, decontamination, specific supportive medical therapies, and equipment. Furthermore, the psychological impact will require crisis intervention stress management (CISM) and pastoral care teams.³⁷

Terrorist groups have the ability to use myriad toxic industrial materials (TIMs) or chemicals (TICs). Factors such as concentration of the agent, delivery method, location of release (confined subterranean space), population demographics, local infrastructure, and capabilities of the emergency management system will determine the TIM or TIC morbidity/mortality ratio. The attacking terrorist group may choose a variety of agents: nerve (e.g., VX, sarin, tabon, soman), vesicant (e.g., mustard, lewisite, phosgene oxime), poisons (cyanide), or a TIC/TIM (chlorine).³⁸ Regardless of the chemical agent employed by terrorists, the United States must have an effective plan to respond in a timely, well-organized incident command system (ICS) construct to mitigate the incident at hand and save lives and prevent great property damage. An AHTC for catastrophic emergencies will help to mitigate this threat.³⁹

Radiological and Nuclear Threats.

The threat of terrorists or rogue states acquiring a nuclear weapon or weapons-grade material is fairly high.⁴⁰ “Between 1993 and 2006, there were 1,080 confirmed incidents of illicit trafficking in nuclear materials. Eighteen of those cases involved weapons-grade

materials, and another 124 involved material capable of making a so-called dirty bomb that would use conventional explosives to spread nuclear material.”⁴¹ This is a concern as the proliferation of nuclear materials is increasing.

In a world community totaling 195 plus states, a few have nuclear weapons; 20 or more states have a chemical or biological weapons program; and over 65 operate nuclear reactors.⁴² The rapidly expanding science of medical radiobiology has required an increasing use of radiological agents and specific isotopes. Radiological material is ubiquitous in medical, engineering, and other research activities. Radiological isotopes are widely available in the open market. In addition, nuclear arsenals – primarily in the former Soviet Union (Russia), China, and the United States – exercise a paradoxical effect on our collective human consciousness. Having become accustomed to vast quantities of nuclear weapons, the public has become desensitized to the destructive potential of a nuclear attack. Other nations (Pakistan, India, France, North Korea, England, and Israel) have these weapons, and Iran is working toward the goal of developing a nuclear weapon. Other nations are also seeking to acquire these weapons, as noted in the November 2004, Central Intelligence Agency (CIA) 721 Report. This report to Congress details the acquisition of nuclear weapons technology by the countries in the “nuclear club.” The CIA report clearly demonstrated that Iran has been pursuing a clandestine nuclear weapons program.⁴³ “The barriers to developing a nuclear weapon today are not intellectual; the barriers instead are the physical requirements needed to make a deliverable weapon that will function reliably.”⁴⁴ This is a concern as the proliferation of nuclear materials is increasing.

The likelihood of a small-yield nuclear accidental release or purposeful (terrorist) attack on a targeted nation or detonation of a radiological dispersal device (RDD, or dirty bomb) is increasing as the proliferation of and familiarity with nuclear technology is becoming more accessible in the cyber domain, on the illicit market, and from nations with the technology.⁴⁵ As the nuclear threat materializes, the necessity for the development an AHTC which provides all-hazard training for catastrophic emergencies is increasingly more essential.

Catastrophic Natural Events.

Global climate change and its potential to cause dramatic weather shifts has increased the prospect of catastrophic natural events and disasters (CNED). The increasing scarcity of fresh water (desalinated) due to global climate change is making it more difficult for many nations to have physical access to water, thereby adversely impacting food production for a growing global population. Scarcity of food and water results in the deaths of millions annually through starvation or as a result of malnutrition and diseases caused by opportunistic organisms or vectors. The potential for these diseases to mutate into a pathogen that can spread pandemically is alarming. The impact of global climate change, whether from natural weather cycles or due to urban sprawl, is also a significant concern. Whatever their provenance, the increased frequency and magnitude of hurricanes, earthquakes, tornadoes, tsunamis, and typhoons seems likely. Hurricanes like Katrina, Rita, and Andrew have significantly affected the U.S. economy and infrastructure and taken many human lives. Effective preparation and response to natural disasters can be addressed by establishing an AHTC for catastrophic emergencies.

Cyberspace Threats.

The prevalence of cyberspace operations on computer network systems and infrastructure—computer dependent networks—makes the United States potentially vulnerable to deliberate computer attacks or exploitation. It is incumbent on all public and private agencies to ensure that adequate cyber-security plans to protect CI/KR computer-dependent sites are in place and utilized. The Center for Strategic and International Studies' December 2008 report on cyber-security declared that "America's failure to protect cyberspace is one of the most urgent national security problems facing the new administration that will take office in January 2009."⁴⁶

Trepidation for cyberspace security dramatically increased following the 2007 attacks on Estonia's information networks and the 2008 Russian cyber attacks on Georgia. Computer attacks can adversely affect access to key infrastructure, compromise vital intellectual data, and target command, control, communication, coordination and information (C⁴I) nodes, airbases, aircraft carriers, and sea and space-based platforms. Indeed, China is developing asymmetrical warfare weapons that can launch such attacks.⁴⁷

The National Infrastructure Protection Plan (NIPP) provides a comprehensive risk management framework to ensure that programs are in place for the protection of information on the assets, systems, networks, and functions that comprise the nation's infrastructure.⁴⁸ An AHTC for catastrophic emergencies would provide training in this area.

The All-Hazards Training Centers for Catastrophic Emergencies.

WMD are the most formidable of all terrorist weapons. In a world where state and nonstate actors seek to acquire CBRNE-C weapons, the risk to the global community is increasing.⁴⁹ Effective preparation and response to a CBRNE-C attack, a catastrophic natural disaster or other critical event that may result in mass casualties requires timely communication systems. To make sound decisions, our leaders need accurate and verifiable data. Such decisions will be made in many domains at the local, county, regional, state, and federal levels. Decisionmakers include emergency responders, elected officials, public health officials, and leaders in the National Guard and federal government. These leaders will need large amounts of information, integrated health data, and resource and asset management data from disparate sources. The AHTC can provide the training required to develop CST (WMD) and emergency responders for preparedness, response, and recovery operations.⁵⁰

Threats of WMD, CBRNE-C, and other asymmetrical threats have created a new security environment. The AHTC for catastrophic emergencies can leverage the educational hands-on and didactic training required to address these threats (see Appendix A).

Since a national emergency will affect supply chain and delivery networks, the AHTC for catastrophic emergencies will be designed to train CST (WMD) and emergency responders in this domain. This will include an understanding of the states' emergency management agency construct.

The U.S. Government will eventually experience a catastrophic event (whether a global pandemic or a thermonuclear attack) of such magnitude that the federal government's ability to provide Command, Control, Communication, Coordination, and Information (C⁴I), COOP, and COG will be disrupted for a period of time. The AHTC will provide training so that CST (WMD) and emergency responders develop into highly capable and strategically well prepared leaders to support the federal government.

AHTCs for catastrophic emergencies should be built in the 10 FEMA regions close to the FEMA regional headquarters and where the original 10 CSTs (WMD) were established. This distribution will enable all states to work closely with their FEMA offices. Other criteria for the placement of an AHTC should include the state's capability to support the AHTC; proximity of the site to key resources and critical infrastructure, strategic proximity to population centers; proximity to a designated joint reception, staging, onward movement and integration (JRSOI) center; and capability to support an array of computers and communication equipment to provide C⁴I via secure means.⁵¹

These sites should be funded by the federal government. The storage of vital records, documents, back-up data, computers, communication equipment, and network integrated systems will ensure that C⁴I can be established and continuously maintained for any contingency or emergency. These designated sites must at a minimum be "warm sites" that are tested and operated monthly to ensure that all essential functions, equipment, data sets, and operational procedures are functional. These sites must be able to be fully operational within 24 hours during a catastrophic emergency. They should also be maintained by a minimal fulltime staff (see Appendix B).

During a catastrophic event, these sites should be able to receive government and military personnel and to function seamlessly within an hour to provide C⁴I.

CONCLUSION

Since the 9/11 attacks, substantial resources have been devoted to improving disaster preparedness for responses to CBRNE-C and CNED emergencies. Simultaneous U.S. catastrophic events could synergistically degrade COOP and COG. The United States must rely on trained emergency responders to provide the backbone of all response activities if these threats materialize.

A network of AHTC sites in the 10 FEMA Regions will ensure that adequate training is available to the CST (WMD) team and emergency responders. As an added benefit, these sites can be used as a C⁴I COOP/COG site as part of the overall U.S. comprehensive homeland security plan. These centers can ensure continuity of essential federal agency functions during a wide range of emergencies in an all-hazards emergency construct. Furthermore, these sites can provide redundancy, ensuring that no single point of failure would disrupt critical governmental functions. These sites will thus strengthen national security, increase public safety, contribute to economic prosperity, reduce time and expenses compared to current training protocols, and facilitate the delivery of critical services to U.S. citizens when they need them most. Appendix A outlines the necessary skills to deal with this training shortfall.

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APPENDIX A

THE PENNSYLVANIA MODEL

Pennsylvania has one of the largest National Guard organizations in the United States. The Pennsylvania National Guard (PNG) has many assets, including its array of equipment. The PNG is within a 150-mile radius of 40 percent of the U.S. population and can support all 15 Emergency Support Functions under the National Incident Management System (NIMS) construct. The PNG has over 90 armories across the Commonwealth and three Air Wings, as well as a large National Training Center (Fort Indiantown Gap).

Pennsylvania is comprised of 44,817 square miles of land strategically and ideally situated among six contiguous states (New York, New Jersey, Delaware, Maryland, West Virginia, and Ohio), along with proximity to the National Capital Region (NCR). Given the proximity of PNG assets to the NCR, it is perfectly located to support an AHTC for catastrophic emergencies.

The federal government should designate the PNG Willow Grove Wing as an AHTC for catastrophic emergencies site. This site can support all of FEMA Region III states and adjacent states for training if the FEMA region II site was obligated. Willow Grove is near Philadelphia and can also be a designated C⁴I COOP site with the ability to ensure continuity of essential federal functions to include plans and procedures for essential functions, safekeeping of vital records and databases, and interoperable communications facilities that enable officials to perform command, control, coordination, communications and computer support functions for a period of time during a national emergency.

ALL-HAZARDS TRAINING CENTER FOR CATASTROPHIC EMERGENCIES SITE

The AHTC for catastrophic emergencies site will consist of a main administration and classroom facility to support the day-to-day operation of the center to enable faculty and staff to deliver traditional instruction. Detached from the main administration and classroom facility will be 12 training annexes, each designed to provide hands-on instruction in a broad range of disciplines and skill sets. A description of each of the annexes as follows.¹

Cyber City.

Cyber City will be co-located with the Center's administrative offices and provide a multitude of functions in support of administration, training, and simulation. Fifty percent of **Cyber City**'s computer capabilities will be partitioned to provide administrative support for the staff and the outlying training sites.

Cyber City will provide a robust network for conducting multilayer computer simulations for high-resolution desktop exercises, staff exercises, and red team/blue team sparring. The National Incident Management System (NIMS) and Incident Command/Unified Command Systems will serve as the centerpiece for all leadership simulation training. This training will be particularly germane for city managers, city planners, and support staff responsible for integrating emergency response capabilities into community policies and procedures.

Cyber City will have an information technology (IT) laboratory to provide selected students with hands-on training in computer and information security. Emphasis will be placed on protective measures, continuity of operations, and damage limitation methodologies—issues relevant to the emergency response community. **Cyber City** will serve as a research and development facility capable of evaluating and assisting in the development of administrative and geological information system (GIS) support tools.²

Mockup City.

This facility is the cornerstone on which all the other training components, annexes, facilities, and apparatus are based. Utilizing a “crawl-walk-run” approach, students use part-task trainers designed to familiarize students with equipment, apparatus, and building materials that they may encounter while responding to an incident. This training provides an in-depth knowledge of hazards that occur in everyday situations, as well as unique hazards posed by man-made and natural disasters. Capitalizing on the outstanding results obtained from military urban combat training centers and the HAMMER facility in Richland, Washington, **Mockup City** will offer a wide array of vehicles and equipment on which to train. Military, federal, state, and local law enforcement/first responders will have the opportunity to practice individual and collective training on part-task mock-ups or full cycle simulation arrays. Students will negotiate, render safe, or penetrate realistic obstacles and hazards like those encountered during an actual incident response.³

Anytown USA.

With the advent of pre-cast and modular construction materials, technology has enabled trainers to build structures of varying dimensions and configurations. Hollywood set design, crafts, and special effects enable trainers to create artificial environments replicating nearly any conceivable array of buildings or individual floor plans. These structures can be broken down and rebuilt in a variety of arrays to support training scenarios and objectives. This eliminates the need to tailor training to fit a set facility. Likewise, by controlling the environments (lighting, obscurants, sounds, smells) within a structure, difficulty levels can be incrementally increased to challenge even the most experienced individual or team. Lessons learned from real world events may be replicated in an effort to add relevancy to training and to highlight situations that may occur outside the norm.

Rubble City.

Often due to budget constraints, time, and other limitations, emergency responder training is conducted in relatively pristine environments. These training facilities lack broken glass, exposed rod iron, standing water, smoke, arcing high power lines, noise, and other hazards that are characteristic of a real incident site. With the exception of hot drills conducted at fire academies, emergency response training is relatively low resolution and low stress. Supporting a “crawl-walk-run” approach to training, **Rubble City** will be designed to place students into strictly controlled environments in which

instructors incrementally increase the amount of stress that the students are subjected to by manipulating the environment. Special effects technology, akin to those used on movie sets, and specially designed training equipment will present students with realistic problems whose solutions require continuous situational awareness and problem-solving skills.

Railroad Junction.

There are over 120,000 miles of major railroad lines that crisscross the United States and well over twice that many spurs and secondary lines. Lack of uniformity and variations in these railroads' age, maintenance posture, design, configuration, routes, and purpose make securing our railways a formidable task. Cost-cutting measures, an increased reliance on remote sensors and an abundance of unsecured manual track switching mechanisms, and unattended rail yards are all recipes for disaster. The U.S. rail system carries approximately 40 percent of the nation's freight and interfaces with air, maritime, and highway networks. Rolling stock carries a wide variety of raw materials and finished consumer goods to every corner of the nation. Many of these materials are hazardous (HAZMAT); they present a major health risk if they were disbursed intentionally or accidentally in or near densely populated areas. Rail traffic follows well-defined routes and schedules, which make them ideal targets for terrorists. Track beds, tunnels, trestles, and spurs are ideal targets. Passenger cars, designed for comfort and safety, present first responders with unique entry and casualty extraction problems when they have derailed or are involved in impact-type mishaps. Should such events involve chemical laden container cars; spills involving HAZMAT can have disastrous consequences for passengers and bystanders, as well as emergency personnel. **Railroad Junction** is designed to provide students with a basic understanding of railroad operations in general and hands-on experience with various types of railroad rolling stock (freight cars, tankers, hoppers, and flat cars) and other apparatus (tracks, switching mechanisms, and signal devices) unique to the railroad industry.

Dodge City.

As with any hard skill, hands-on training is critical to competency and retention. The **Dodge City** training facility will be designed to provide students and instructors with opportunities to employ forcible entry tools, explosives, small arms, and specialized apparatus in response to realistic scenarios designed to challenge the problem-solving abilities and creativity of students. Skid pads, bullet absorbing concrete, multistory and subterranean structures, and special effects are ideal for training fire-rescue, law enforcement, and military personnel. This fully-instrumented site will capture the actions of all participants and decisionmakers by means of imbedded cameras, microphones, and other recording devices. Where appropriate, film footage and communications segments will be integrated into take-home packages and exportable training programs. Capitalizing on training techniques developed by the armed forces at urban training facilities and maneuver warfare centers, After Action Reviews (AARs) will be conducted on site immediately after a drill or exercise, to maximize lessons learned and retention of skills.

Terror Lab.

There are approximately 66,000 chemical plants within the United States. In addition, there are thousands of colleges, universities, research facilities, hospitals, nurseries, and hardware stores. The amount of chemical, biological, and radiological materials in these sites creates a security risk. With hate groups proliferating and terrorist cells operating within our borders, it is only a matter of time until one of these groups, or an unstable individual, exploits an opportunity to attain these materials and construct an insidiously effective device. Spills and releases of such materials resulting from accidents and man-made or natural disasters are also inevitable. The likelihood that emergency responders will encounter clandestine laboratories increases every day. The **Terror Lab** facility will be designed to familiarize students with a variety of apparatuses—such as fermenters, dryers, milling machines, bioreactors, chemical precursors, and radiation sources—that they may encounter when responding to calls for assistance. The responders' ability to quickly ascertain whether or not they have encountered a methamphetamine lab or something more ominous, such as a chemical or bio lab may make the difference between safely containing a potentially volatile situation and having to deal with mass casualties.

Thunder Road.

The United States has over 590,000 miles of major highways and an astronomically higher number of secondary routes and roads. Like the circulatory system transporting blood and nutrients to all parts of the body, these transportation routes allow the movement of people, goods, and services to every corner of the nation. The unrestricted travel enjoyed by U.S. citizens is the envy of the world. This unrestricted, and for the most part unregulated, travel is also a liability. At every hour of the day, commercial vehicles, campers, and other privately owned conveyances transport hazardous materials through, or near, major population centers. This freedom of movement provides terrorists with ample opportunities to inflict death and destruction indiscriminately or to attack a desired target. The **Thunder Road** training facility is designed to provide law enforcement personnel and other first responders with insights into the threats posed by vehicle transported hazardous materials and the potential consequences of a man-made or natural disaster. Transport vehicles of various configurations (i.e., tanker, flat bed, cement mixer, and box trucks) would be incorporated into training to familiarize students with the unique aspects of each type.

Aviation Training Facility.

Typically, U.S. air carriers transport millions of people and billions of tons of cargo each year to and from some 5,000 public airports. Add to this number the thousands of foreign carriers that fly in and out of our terminals and one can begin to appreciate the complexity of the aviation industry. Diseases that were once thought to be isolated and remote are now just an international flight away. In-flight meal catering, aircraft

servicing, baggage handling, and myriad other functions unique to the airline industry are fraught with opportunities for criminal or terrorist activities.

The **Aviation Training Facility** will replicate environments unique to passenger and airfreight terminals. In addition to becoming familiar with the hazards of working in and around aircraft, military and law enforcement personnel will receive training on aircraft seizures and hostage rescues. Search procedures for explosives, drugs, and contraband materials will be standard curriculum. Fire and rescue personnel will practice response procedures appropriate for working with aircraft and aviation materials.

City Works Training Facility.

Cities are nerve centers for economic and social activities. As such, they represent lucrative targets for terrorists. A single urban incident can have disproportional impact on the entire population and can disrupt commerce and other activities for days, perhaps weeks. Hospitals, schools, shopping malls, and convention centers represent just a few potential targets. They are all dependent on a complex array of public utilities to sustain their daily operations. Should an incident take place, the city's public works director will play a crucial role in supporting the efforts of first responders. The ability to selectively cut off power and other utilities in affected areas can limit damage, increase rescue efforts, and facilitate recovery. The **City Works Training Facility** will acquaint students with the various services provided by public works and their interrelationships. Knowing how water, power, gas, drainage, road networks, bridges, and rail crossings factor into emergency planning can contribute immeasurably to limiting damage and recovering the infrastructure.

Maritime Training Facility.

There are 361 major ports and well over 3,000 smaller port facilities, including shipping terminals (cargo and passenger) and factories along our nation's coasts and inland waterways. These facilities, and the over 9,000 vessels that service them on a daily basis, present vulnerabilities which could be exploited by terrorists—costing lives, damaging the environment, disrupting transportation, and jolting the economy. Our waterways can act as a conduit for smuggling weapons, terrorists, illegal immigrants, drugs, and other illicit cargos. With perhaps the exception of the nuclear power industry, maritime disasters (natural or man-made) have the greatest potential for inflicting irreparable damage on the environment. Students will be familiarized with training on port facility operations and interoperability of the maritime industry with other segments of the transportation sector. The **Maritime Training Facility** will replicate the environment unique to ports and marinas. Military, federal, state, and local law enforcement personnel can practice a wide range of skills from underwater hull searches to vessel search and seizures. Fire and rescue personnel can practice fire-fighting and rescue operations from the confines of shipboard compartments and holds.

Food Chain Training Facility.

There are approximately 1,912,000 farms and 87,000 food-processing plants within the United States. Crops and animals are transported long distances every day (an average of 1,300 miles from source to market) as they make their way to our dining room tables. In transit, they may spend time in storage areas, come in contact with other crops and animals, food handlers, and processing apparatus. Throughout the entire process, they are relatively unsecured and may be exposed to pathogens that present a health risk to humans. This situation is further exacerbated by introduction of foreign produce of questionable origin, thereby, making our food industry one of the most vulnerable areas of our economy. Terrorist groups, particularly al-Qaeda, have identified our agricultural base and food chain for exploitation. Early detection and remediation are essential for containing and eradicating diseases that could pose disastrous consequences for our public health, to say nothing of damage to a multi-billion-dollar industry. The **Food Chain Training Facility** will be designed to acquaint the student with all stages of food production. Biosecurity measures—including surveillance, preventive, and response measures—along the entire food chain, will be discussed in detail. Plant and animal pathogens will be studied with an emphasis on those having the greatest potential adverse impact on public health. Terrorist groups and methods of pathogen introduction (direct, indirect, and airborne) will be studied. Agricultural implements—to include crop dusters, chemical mixers, fertilizers, and pesticides—with the potential to be used as terrorist weapons, will be incorporated into practical exercises. Federal food safety guidelines and the roles of state veterinary and health service departments will be covered.

Curriculum Design and Content.⁴

The AHTC for catastrophic emergencies curriculum will be drawn from the government, academia, and private industry. Specific duty positions required for this AHTC can be found in Appendix B. The National Response Framework and National Preparedness Goals developed by the Department of Homeland Security will be integral components of the curriculum. Based on a modular design approach, the curriculum will be formulated to address a multiplicity of disciplines and skill levels. Each block of instruction will be assigned an identification number that will identify a major field of study (i.e.1.2.2.1) and supporting content. Courses of instruction can be tailored to the targeted population by selection of instructional materials from across the entire spectrum of instruction. For subject matter overseen by a government regulatory agency (i.e., Department of Energy, Department of Transportation, or Environmental Protection Agency) or professional body (i.e., National Fire Academy, Emergency Management Institute, or American Medical Association), the proponent agency will be solicited to provide input and approve the curriculum. Where appropriate, the regulatory agency or professional body may provide a permanent instructor for the school.

Resident instruction will be provided by a full-time faculty. As with other degree-producing programs, students would be responsible for tuition costs and other expenses associated with enrollment and class participation. Full-time students will have access to the full array of Center classrooms and the supporting annexes. For those not involved

in full-time instruction, scheduled recurring classes will be conducted to accommodate students with full-time jobs. In an effort to address topics outside the normal curriculum or to avail students and academicians of the knowledge and experience of guest speakers or subject-matter experts, conferences and seminars will be scheduled to capitalize on such opportunities.

To address the needs of students unable to attend classes at the center, mobile training teams (MTTs) and distance learning capabilities will be available. These capabilities would enable the Centers to address the needs of emergency medical technicians (EMTs), volunteer fire departments, law enforcement personnel, and other members of the emergency response community (ERC), who—due to time, distance, or budget constraints—cannot attend on-site instruction. The MTT will consist of qualified instructors, a vehicle equipped with all required audiovisual and text materials, and appropriate training aids to facilitate instruction. Additionally, training of Community Emergency Response Teams (CERT) and other volunteer organizations can be supported with greater efficiency. Capitalizing on advances in telecommunications technology, the Center will employ teleconferencing and distance learning techniques to deliver training to individuals and organizations not serviced by MTTs or lacking access to the campus facilities. Distributive learning also permits rapid dissemination of information that may be time-sensitive or of new critical importance.

Building a campus from the ground up—complete with classrooms, audiovisual equipment, training annexes, and instructional apparatus—prior to the start of classes has both advantages and disadvantages. Whereas this approach can be designed to support the greatest number of students and subject areas, it is also the most expensive. Modifying or adapting existing complexes (airfields, shipping terminals, and rail heads) to accommodate training can greatly reduce construction costs. This kind of transformation can breathe new life into structures or facilities that would otherwise be destined to slow deterioration such as the PNG Willow Grove facility.

Large, prefabricated warehouse structures may be suitable for training provided that they have concrete flooring and can be climate-controlled. They can house vehicles, training apparatus, and other structures that can be disassembled and removed as needed. While this approach has cost advantages over the previous two, it also has disadvantages from a training standpoint. Instructors are limited by the size and complexity of training apparatuses that they can use. Additionally, they may be hampered by time constraints when the same apparatus must support multiple training events occurring in rapid succession.

Regardless of the design approach used, significant synergisms and cost-saving may be possible by enlisting the help of local colleges, businesses, and government agencies. Educational institutions can be challenged to develop designs for training facilities and apparatus based on guidelines provided by the Center staff. Cash prizes or naming rights can promote a spirit of competition among participants. Private industry can be encouraged to donate materials and equipment as a public service or for tax deduction purposes. Rail cars, tanker trucks, and aircraft fuselages are just a few examples of items that have been donated to other training facilities. Additionally, they may showcase their equipment by donating it for use in training.

The Defense Marketing and Reutilization Office (DRMO) disposes billions of dollars of obsolete or unwanted materials and equipment each year. Much of this equipment is suitable for training and can be used to increase realism. This is particularly true when a training scenario calls for the destruction of an item of equipment.

ENDNOTES - APPENDIX A

1. Xavier Stewart and William Oberholtzer, WMD/CBRNE Training Facility, Xavier Stewart, Inc., Lewes, Delaware, PA, 1998, pp. 1-28.
2. *Ibid.*
3. *Ibid.*
4. *Ibid.*, pp. 1-33.

APPENDIX B

POSITIONS

The Training Center director will report to the lead agency. The Center director is responsible for all aspects of the Center's operation. Together with the staff, the director formulates policies pertaining to all aspects of Center operation. The director coordinates with the Departments of Defense, Justice, and other federal/state agencies to ensure that the Center continues to address the contemporary and emerging needs of the emergency response community. Through the Center's instructors and staff, the director conducts periodic reviews of training programs to ensure that emerging threats, advances in technology, and legal changes are integrated into the curriculum.

In the absence of the Center director, the deputy director performs the duties of the director by formulating staff operating procedures and by supervising and ensuring coordination among the Center's staff. The deputy director maintains liaison with defense, federal, state, and local agencies and supervises the administrative staff to ensure compliance with the Center's policies and directives. Additionally, the deputy reviews staff actions to assure they are adequate, coordinated, and designed to produce the intended results. Finally, the deputy keeps the entire staff informed of policies and events that may affect daily operations.

The Center's legal counsel provides legal advice as appropriate. The counsel interprets federal, state, and local statutes to ensure compliance. The legal counsel represents the Center in all matters dealing with litigation and participates in the acquisition process to include planning, solicitation, and contracting. The counsel provides legal advice on union labor agreements (where applicable) and on adverse action hearings and grievances. Finally, the counsel reviews curriculum to ensure it remains current with regard to any changes in law.

The Center's senior intelligence analyst supervises the All-Source Intelligence Center located in a secret compartmented information facility (SCIF). The mission of the All Source Intelligence Center (ASIC) is to provide the Center with current threat data for incorporation into the curriculum. Threat information is obtained through close coordination with the intelligence community and by careful screening of open source literature. Instruction will focus on the likely threats to be encountered by military, law enforcement, and first responder personnel, and on those threats with the most severe consequences. The intelligence analyst provides classified briefings for those with appropriate clearances and a need to know.

The Center's comptroller establishes plans, policies, and procedures for the development and implementation of the Center's budget. The comptroller provides assistance to the Center's staff on budget methods and formats, techniques of preparation, presentation, and analysis. He/she ensures that selected commercial products and services are obtained by the most cost-advantageous and effective methods. The comptroller monitors the administrative controls, accounting, and financial reporting for the receipt and disbursement of funds. Finally, the comptroller conducts periodic budget reviews to ensure policy compliance.

The Center's Director of Research Development and Engineering (DRDE) conducts open source searches for emerging technologies with applications in the weapons of mass destruction (WMD), drug interdiction, and emergency management arenas. The DRDE evaluates the potential of commercially available off-the-shelf equipment for use by military, law enforcement, and emergency response organizations. The DRDE develops material need statements for release to the material development community. The director works closely with national, academic, and industrial laboratories to find hardware solutions to capability shortfalls. Where appropriate, the DRDE conducts side-by-side field-testing of prototype equipment.

The Center's Director of Support (DOS) oversees the management and operation of all Center supply and maintenance activities. The DOS develops procedures for the request, receipt, issue, safeguard, and accountability of all property, supplies and equipment utilized by the Center. The DOS establishes minimum and maximum stock levels for all consumable and expendable materials. Finally, the DOS maintains the Center's office, classroom, and outlying training centers.

The Center's Director of Training (DOT) develops, conducts, reviews, and updates all training programs provided by the Center. The DOT promotes continuous refinement and updating of the curriculum and instructional services provided by the Training Directorate. The DOT oversees selection and certification of instructors. Finally, the DOT coordinates with the Center's staff to ensure the optimum mix of traditional and nontraditional instructional techniques are utilized to enhance students' learning.

The Center's Chief of Facility Management (CFM) supervises the fabrication and maintenance of all of the Center's equipment. The CFM configures mock-ups, prefabricated buildings, and other equipment to support training scenarios and part-task training. The CFM engineers special effects in and around the training sites to enhance realism and increase the fidelity of the training. The CFM coordinates directly with the instructional staff to ensure the Training Center contribute's to skill mastery by students.

The Center's Chief of Instrumentation (COI) oversees the installation and maintenance of all camera and monitoring equipment utilized by the Training Centers. The COI monitors, records, and time tags all video and audio footage for use in After-Action-Reviews (AARs), Take-Home-Packages (THP), and instructional products. The COI coordinates with instructional staff and media specialists to ensure optimal data collection to support instruction and curriculum development.

The Center's Chief of Automation Management (CAM) advises the Center's staff on all automatic data processing (ADP) matters and develops ADP policies and procedures. The CAM is responsible for computer security. The CAM manages all computer resources of the Center and personally directs the activities of **Cyber City** and the Center Teleconferencing Facility. Finally, the CAM evaluates emerging computer technology to include Geological Information Systems (GIS) and simulation software for incorporation into instruction, particularly table top exercises.

The Center's Chief of Curriculum Development (CCD) develops and updates the Center's annual training calendar in response to the training requirements. The CCD is responsible for all training presented or developed at the Center. The CCD develops standard training packages as well as specialized curriculums, and approves conditions

and standards for all individual and collective training. The CCD designs the optimal mix of platform and hands-on exercises to ensure subject mastery by students.

The Center's Chief of Instructor Management (CIM) oversees the selection, validation, and certification of instructors for the Center. In cooperation with the Director of Training, the CIM assigns qualified instructors to platform duties or curriculum development and ensures equitable distribution of workload and instructor availability. The CIM assures adequate coverage for classes and appropriate backfill for periods of peak throughput and provides instructors with opportunities for professional development and continuing education.

The Center's Chief of Mobile Training Teams (CMTT) is responsible for the formulation of export packages and teams of instructors to assist in or conduct training for military, federal, state, local law enforcement, and other emergency management personnel unable to participate in training at the Center. The CMTT ensures that team vehicles, audiovisual equipment, and other training materials are current and available in sufficient quantities to support clientele. Finally, the CMTT selects an appropriate mix of qualified instructors to address student needs.

The Center's Chief of Multi-Media and Publications (CMMP) supervises the production of all media produced by the Center. The CMMP ensures that printed materials are produced in sufficient quantity to support training. The CMMP also provides platform and Center training with appropriate audiovisual support and oversees the media production studio and print plant. Finally, the CMMP develops multi-media and computer based instructional material for use in take-home and exportable training programs.